Honors Problem 3: Bezout Identity

Two non-zero integers a, b, are given as input, with no common factors, i.e. $GCD(a, b) = 1$.

A) Write a program (on paper) that finds the integers x, y such that $ax + by = 1$.

B) Analyze the program for run time: roughly how many steps it takes to finish in the worst case, as a function of magnitude of the input integers a and b

C) Implement your program using your favorite programming language. Your program should also verify the "no common factors" input condition.